

Institutional Frameworks Case Study Mount Laurel Township, New Jersey

1.0 Introduction/Summary

Mount Laurel Township is one of many places in New Jersey where former orchards and other agricultural areas have been and are being developed into residential housing, commercial businesses, or public facilities. Historical use of pesticides including lead arsenate contaminated these properties with arsenic, lead, dieldrin, and other organochlorides. Mount Laurel Township was one of the first municipalities in New Jersey to enact an ordinance requiring soil testing and cleanup of new developments on properties with historical pesticide contamination. This case study discusses how Mount Laurel Township identified and addressed the issue of historical pesticide contamination, provides examples of developments on former farmland in Mount Laurel, describes the State of New Jersey's approaches to address historical pesticide contamination, and concludes with lessons learned from these experiences.

The remainder of this case study is organized as follows.

- Section 2 provides background on Mount Laurel Township and its approach to address historical pesticide contamination.
- Section 3 describes examples of developments on formerly agricultural land in Mount Laurel.
- Section 4 discusses the New Jersey Department of Environmental Protection's approach to address historical pesticide contamination.
- Section 5 discusses lessons learned from problem assessment and the implementation of protective measures.
- Section 6 lists references consulted for the case study.

2.0 Background

2.1 *Mount Laurel*

Mount Laurel is a roughly 22 square mile township of over 40,000 people located in south-central New Jersey near the western border with Pennsylvania. Mount Laurel is in Burlington County, historically one of New Jersey's leading agricultural counties. The township's population has more than doubled in the last 20 years, and much of the new development in Mount Laurel and other areas of Burlington County has been on formerly agricultural land. One of Mount Laurel Township's current challenges is to preserve open space, much of which is or was in agricultural production, in the face of high demand for residential housing.

Mount Laurel has high levels of naturally occurring arsenic in soils—with concentrations over 300 parts per million (ppm) in some places with glauconitic soil—as well as historical pesticide contamination at former orchards and other agricultural areas where pesticides such as lead arsenate, dieldrin, and other organochlorides were used. The main contaminants of concern at properties with historical pesticide contamination are arsenic and dieldrin. Because in the past developers removed topsoil from farmland and sold it prior to development, arsenic concentrations in formerly agricultural areas of Mount Laurel—typically around 20-50 ppm—are probably smaller than they were historically.

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2.2 *Mt. Laurel's Approach to Development of Former Agricultural Lands*

Mount Laurel Township became aware of the issue of historical pesticide contamination through media reports of the New Jersey Department of Environmental Protection's (NJDEP) emergency cleanup of residential properties with historical pesticide contamination at the Burlington Heights development in the nearby Burlington Township in 1996.

- Soil Removal at Burlington Heights Development. Burlington Heights is a housing development located on part of a former orchard in Burlington Township. A developer who wanted to develop the remaining undeveloped portions of the orchard into residential housing as part of a new housing development called Sunset Ridge sampled the soils and, since arsenic concentrations exceeded the NJDEP's soil cleanup criterion of 20 ppm (arsenic concentrations were up to 165 ppm), contacted the NJDEP about doing a voluntary cleanup in 1995. From these sampling results, the NJDEP realized that there might be historical pesticide contamination at existing residences since they had not already been remediated. In 1996, NJDEP conducted an "emergency" soil removal at existing residential yards at Burlington Heights. The emergency removal at residences included sampling residential yards, removing contaminated surface soils, and replacing them with clean fill and sod. NJDEP paid \$500,000 for public outreach, sampling, soil removal, and soil and sod replacement at Burlington Heights.

It was this cleanup at Burlington Heights that provided the impetus for the NJDEP to form a Historic Pesticide Contamination Task Force to recommend strategies for addressing historical pesticide contamination (discussed further below).

After learning from a newspaper article that historical pesticide contamination was likely to be a problem in Mount Laurel, the Township did some research on historical aerial photographs and maps of the township to identify areas that had previously been orchards or other agricultural areas. Based on this research, the Township notified residents of formerly agricultural areas about the potential for historical pesticide contamination problems and distributed recommendations from the Township's Health Department for individual protection measures to reduce exposure, such as hand washing. At first, there was a large public outcry from residents in housing developments on formerly agricultural land, but residents' concerns rapidly died down after the initial reaction. Other municipalities also criticized the Township for letting people know about the potential problem. A couple of property sales fell through after information about historical pesticide contamination in Mount Laurel was more widely known, but these properties eventually sold for more than their original prices.

In addition to notifying existing residents about potential historical pesticide contamination problems, Mount Laurel Township enacted an ordinance requiring soil testing and cleanup of properties prior to new development—both residential and non-residential—in the township.

2.3 *Mount Laurel Soil Testing and Cleanup Ordinance*

In July 1996, Mount Laurel Township enacted a "Soil Testing and Cleanup" ordinance, which is now Chapter 133 of Mount Laurel Township's Code, requiring that soils be tested before any new residential or non-residential development occurs to determine whether the concentrations of any substances on the property exceed NJDEP soil cleanup criteria. If any contaminants exceed the State cleanup criteria, the property must either be completely remediated according to State rules and regulations or the developer needs to provide documentation from the NJDEP

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stating that the property may be developed with less than complete remediation according to a plan approved by the NJDEP.

In practice, instead of requiring soil testing for all properties, Mount Laurel Township lets developers conduct a Phase I environmental assessment of properties to determine whether the properties may have been used for agriculture in the past or may have contamination associated with other past land uses and submit those assessments to the Township Engineer for review. The Township Engineer reviews the Phase I assessments submitted by developers and, if pesticides or other sources of contamination may be present, instructs the developers to test soils at the properties as part of Phase II environmental assessments and work with the NJDEP to conduct any necessary remediation. These working procedures have been developed, and were recently finalized in an amendment to the Soil Testing and Cleanup Ordinance, to reduce the burden of the ordinance on developers and to tie the ordinance to existing development processes, such as Phase I environmental assessments, and to the State's voluntary cleanup program.

In 2002, Mount Laurel Township made several changes to its soil testing and cleanup ordinance, including the following:

- It made the soil testing and remediation requirements apply only to properties that were formerly part of an agricultural area or orchard (as determined by the Township Engineer) as opposed to all properties about to be developed.
- It changed the ordinance to allow “No Further Action” letters from the NJDEP as documentation that any necessary remediation has occurred on the undeveloped properties that were formerly part of an agricultural area or orchard.

3.0 Mount Laurel Development Projects

In addition to private developments, Mount Laurel Township has developed recreational facilities on former farmland and has acquired former farmland for preservation as open space. As a developer, Mount Laurel Township also works with the NJDEP and ensures that the Township's cleanups are consistent with NJDEP Technical Requirements for Site Remediation. Mount Laurel Township uses an Open Space Trust Fund approved by voters in 1998 to acquire open space and requires that current property owners clean up properties before purchase.

Examples of public and private developments on former farmland in Mount Laurel include hockey rinks at Devonshire Park, the Fentell housing development, and Bobby's Hunt housing development, all of which are discussed below.

3.1 Consolidation and Capping for Devonshire Park Development

Devonshire Park is a roughly four-acre public recreation area—including three roller hockey rinks, two tennis courts, and a basketball court—developed by Mount Laurel Township on the site of a former apple orchard that had contamination from the use of lead arsenate and other pesticides. The Township remediated the property—which had some areas with arsenic soil concentrations above 20 ppm, NJDEP's cleanup criterion for arsenic—by consolidating and capping the contaminated soil under areas that would become roller hockey rinks and under a berm on the property. Arsenic concentrations were generally less than 50 ppm. Because the Township used capping to prevent exposure to contaminants at the site, the Township will also place a deed notice on the property and will be required by the NJDEP to inspect the caps to

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ensure they remain protective and report to the NJDEP every two years. The development of Devonshire Park has cost the Township almost \$1 million, including \$200,000 to construct the hockey rinks.

3.2 *Soil Blending for Fentell Housing Development*

The Fentell housing development, which is being developed in phases, is located on a 133-acre property in Mount Laurel. Fifty-five acres of the property had been used for agriculture, mostly as an apple orchard. Owners of the farm had used arsenical pesticides including lead arsenate at the orchard. Arsenic was the only contaminant on the property in concentrations above NJDEP's cleanup criteria. About two acres of the property had arsenic soil concentrations above 20 ppm, NJDEP's cleanup criterion for arsenic, and one area had an arsenic concentration of 42.5 ppm. The developer decided to blend contaminated soils on the property with clean soil to address the historical pesticide contamination on the property. Soil blending of the two acres of contaminated soil and all the associated contracting work, including sampling and investigation of contamination at the 133-acre site, cost \$75,000, which the developer paid. The property is adjacent to wetlands and access to contaminated areas on the property was difficult, so this increased the costs of remediation. (Unlike this example, the NJDEP has found that typically soil blending is less expensive than soil removal for remediating historical pesticide contamination sites if soil concentrations are less than five times the cleanup levels.)

3.3 *Soil Removal for Bobby's Hunt Housing Development*

Bobby's Hunt was a 14-acre farm in Mount Laurel that is being developed into a residential development for about 14 homes. Lead arsenate had been used as a pesticide at the farm, which resulted in average arsenic concentrations of 23 ppm in surface soils. Arsenic was the only contaminant on the property in concentrations above NJDEP's cleanup criteria. About four acres on the property had arsenic soil concentrations above 20 ppm, NJDEP's cleanup criterion for arsenic. In addition, the site had naturally occurring arsenic at depths below three feet, where the soil was rich in glauconite. To remediate the property, the developer decided to excavate the top foot of soil from the four acres of the property with arsenic concentrations above 20 ppm and dispose the contaminated soil in a landfill. The developer's total costs for this cleanup—including consultant fees, sampling costs, and fees for excavation and transport of contaminated soils (there was no charge for disposal)—were \$7,000.

4.0 State Programs Related to Historical Pesticide Contamination

4.1 *The Historic Pesticide Contamination Task Force*

The State of New Jersey formed the Historic Pesticide Contamination Task Force in 1997 to identify technically and economically viable alternative strategies that will be protective of human health and the environment for sites with contamination due to historical use of pesticides. The Mount Laurel Township Manager served on the Task Force, representing the New Jersey State League of Municipalities. The Task Force offered a variety of recommendations to assist those involved in the remediation of agricultural properties that have been developed and that will be developed in the future. As of this date, the Task Force recommendations have not been formally adopted by the State legislature, but are instead used by the NJDEP as guidance. In addition, NJDEP has adopted some of the individual Task Force recommendations. These recommendations, which are discussed below, include allowing soil blending as a remediation alternative, developing guidance concerning sampling methods and

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exposure control alternatives, and recommending sampling of former agricultural areas prior to site development.

Due to the attention to historical pesticide contamination issues, in particular the formation of the Historic Pesticide Contamination Task Force, some lending institutions in New Jersey have adopted requirements for soil testing on formerly agricultural properties.

4.2 *Legal Authorities*

There are two trigger points for the involvement of NJDEP in historical pesticide contamination cases (both must be satisfied):

1. There is a change in land use (i.e., former agricultural land is being converted to other uses).
2. Sampling demonstrates contaminant concentrations that exceed unrestricted use cleanup standards as defined in the NJDEP Soil Cleanup Criteria (includes the following: 20 ppm for arsenic, 400 ppm for lead, 2 ppm for DDT, 0.04 ppm for Aldrin, and 0.042 ppm for dieldrin).

The Soil Cleanup Criteria are used as indicators that a cleanup might be required. Other criteria, such as environmental impacts, site-specific conditions and background levels, may also be considered, and these could result in a site-specific cleanup level that differs from the Soil Cleanup Criteria. All proposed site-specific cleanup levels that exceed the Soil Cleanup Criteria must be approved by NJDEP.

4.3 *Protective Measures for Addressing Historical Pesticide Contamination*

NJDEP has adopted the following range of strategies for cleaning up historical pesticide contamination.

- Excavate and dispose of contaminated soil in a landfill.
- Excavate and bury contaminated soil, which must be more than five feet from seasonal groundwater when buried.
- Install a cap in place. (This has associated deed notice requirements.)
- Consolidate contaminated soil in an area on site and cap that area. (This has associated deed notice requirements.)
- Blend contaminated soil with clean soil or till the contaminated soil to mix it with deeper, less contaminated soil. (This has associated post-blending sampling requirements.)
- If a farmer is selling only one part of a property, the farmer can move soil from the parcel being sold to other parts of the property. (This has no associated deed notice requirements.)

4.4 *Physical Protection Measures*

Soil Blending and Tilling

NJDEP allows soil tilling (i.e., turning over the soil) or soil blending (tilling with the addition of clean soil) as a strategy only for formerly agricultural soils. Soil tilling or blending allows contaminated surface soils to mix with cleaner soils below the surface or allows contaminated

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surface soils to blend with “clean” fill brought in from off the site. Aeration of the contaminated soil during may release volatile emissions.

NJDEP has developed a testing protocol for clean soil to be used in soil blending at historic pesticide residue sites. This protocol defines clean soil as that which is:

- Similar in physical properties to the soil in or adjacent to the area of concern;
- Free from extraneous debris or solid waste;
- Of equal or less permeability than the native soil in or adjacent to the area of concern;
- Accompanied by source document as required by the Technical Requirements for Site Remediation (i.e., certification that it is virgin material or decontaminated recycled soil and is not contaminated pursuant to any applicable remediation standards);
- Uncontaminated pursuant to a comparison of data to the NJDEP’s most recent unrestricted use Soil Cleanup Criteria. (NJDEP also provides sampling requirements to demonstrate that soil is uncontaminated. This involves using a composite from five individual and representative samples.)

Soil blending also has stringent post blending sampling requirements that include the following:

- Four samples of surface soil (0-6”) must be taken per acre
- For each location where blending has occurred, samples must be taken at greater depths

Engineering Controls

All engineering controls (such as caps, fences, containment walls, etc.) that do not fully remove contaminated soil from the site have associated deed notices and biennial reporting requirements to the NJDEP. As a condition of the No Further Action/Covenant Not to Sue Letters (described below), and in order to maintain the benefit of the Covenant Not to Sue, engineering controls must be evaluated every two years to ensure the measures remain protective.

4.5 Institutional Protection Measures

Deed Notices

A deed notice is required by NJDEP when contaminated soils are present at a site above the Residential Direct Contact Soil Cleanup Criteria before the issuance of the No Further Action/Covenant Not to Sue letter. If a property is sold, the deed notice will provide notice to subsequent owners and other prospective users (lessees, etc.). The deed notice will provide information regarding the site, presence of contaminants, and any compliance monitoring requirements. The requirements may include, but are not limited to: cap maintenance, inspection requirements, and notification requirements.

Deed notices have associated biennial reporting requirements. To comply with the requirements, the person responsible for monitoring the deed notice must certify:

- That the deed notice has been properly filed and remains on file with the office of the county recording officer and no subsequent notices have been filed to nullify the original notice;
- That the land use is consistent with the use restrictions identified in the deed notice;

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- That any excavation or disturbance that has taken place within the restricted area enumerated in the deed notice, since the last biennial certification presents no unacceptable risk to the public health and safety or the environment;
- That any engineering controls (i.e., caps, fencing, containment walls, etc.) are being inspected and maintained and their integrity remains so that the remedial action continues to be protective of the public health and safety and of the environment.

4.6 *Individual Protection Measures*

NJDEP has developed information for homeowners and buyers about historic pesticide contamination and potential human health impacts. NJDEP lists arsenic, lead, DDT, Aldrin, and their breakdown products (e.g., dieldrin) as the primary pesticides of concern. NJDEP also provides information on the known health effects of these pesticides as well as the NJDEP soil cleanup criteria. NJDEP estimates that up to five percent of the state's acreage may have historical pesticide contamination and indicates to homeowners that the primary health concerns have to do with human health impacts resulting from long-term ingestion of contaminated soil, particularly by children. In addition to providing contacts for further information, NJDEP homeowners/buyers guidance provides the following recommendations:

- Soil sampling should be conducted when an agricultural property changes land use (i.e., farmland developed into a housing development or municipal park).
- Soil sampling should be conducted in former agricultural areas intensively used by children (schools, daycare centers, playgrounds).
- At any time, if a property owner wants NJDEP approval of their investigation, they would need to conduct a thorough environmental evaluation of the property and should consult NJDEP for guidance.
- Homeowners interested in testing the soil on their own property should contact NJDEP for guidance on the sampling procedures.
- Several actions can be taken to minimize the chance of contact with contamination that may be in the soil.
 - Keep good grass coverage; this acts as a barrier to contact with the soil below.
 - Cover any disturbed or excavated soil.
 - Wash fruits and vegetables from your garden before eating. Uptake of contaminants into the food is not as much of a concern as possible ingestion of the soil.
 - Wash hands and face after playing outside and before meals and snacks.
 - Wash toys and pacifiers frequently.
 - Mop surfaces where children play.

(Source: New Jersey Department of Environmental Protection Site Remediation Program. "Historic Pesticide Contamination: Information for home owners, home buyers and other members of the public", January 1999 (updated October 23, 2000).

4.7 *Technical Assistance/Services*

Soil Sampling and Investigation

NJDEP provides guidance on soil sampling procedures for homeowners/buyers, as well as general sampling requirements for people conducting a remediation.

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NJDEP provides approval of homeowners' soil contamination investigation. To receive this approval, the owner must conduct a thorough environmental evaluation of the property ~~and~~ in conformance with NJDEP ~~for~~ guidance.

4.8 *Liability Protections*

Covenant Not to Sue

The NJDEP includes a Covenant Not to Sue with all No Further Action Letters issued for an area of concern or a full site. As part of NJDEP's Voluntary Cleanup Program, NJDEP issues a No Further Action Letter after a developer or property owner has voluntarily remediated a site according to the NJDEP Technical Requirements for Site Remediation. The No Further Action letter informs the developer or property owner that the NJDEP intends to take no further action, such as requiring cleanup, at the site. The Covenant Not to Sue, as stated in the revised Technical Requirements for Site Remediation, consists of the following statement: "[NJDEP] will not bring civil action for payment of compensation for damages to, or loss of natural resources, against parties who are not liable for cleanup and removal costs and who undertook the remediation of a site or are the subsequent owners, lessees, or operators of the property. This protection from exposure to liability could encourage more private parties to proceed with remediating contaminated sites, thus limiting the public's exposure to contamination."

Innocent Purchaser Protection

The State of New Jersey provides "Innocent Purchaser Protection." The protection provides a purchaser who investigates and remediates a property with a liability exemption from the New Jersey Spill Compensation and Control Act.

5.0 **Lessons Learned**

5.1 *What Worked Well*

Quick Response to Potential Health Threat. Mount Laurel Township took immediate actions to address potential health threats posed by historical pesticide contamination, including identifying potential areas of concern, notifying residents, and providing recommendations for reducing individual exposure. It also was one of the first municipalities to enact an ordinance to address potential contamination at future developments.

Working Procedures for Soil Testing and Cleanup Ordinance. The working procedures Mount Laurel Township developed for the Soil Testing and Cleanup ordinance reduced the burden of the ordinance on developers by aligning the Township's requirements to existing development processes and the State Voluntary Cleanup Program. This minimized the amount of additional time or cost imposed on developers by the ordinance.

5.2 *What Did Not Work Well (or Challenges Being Faced)*

Adoption of Soil Testing and/or Cleanup Requirements by Other Local Governments. Other municipalities with historical pesticide contamination tried to follow the lead of Mount Laurel and Burlington Townships by adopting requirements for soil testing and cleanup, but many have failed. In addition, a State Court ruling in 2001 on a legal suit brought by the New Jersey

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Business League stated that municipalities cannot impose stricter requirements on developers or property owners for remediation of historical pesticide contamination sites than the NJDEP's Technical Requirements for Site Remediation and cannot require testing or remediation of sites that are not affected by historical pesticide contamination.

Adoption of Task Force Recommendations. The State of New Jersey made the Historic Pesticide Contamination Task Force's report an advisory document rather than adopting the Task Force's recommendations as regulatory requirements. The NJDEP, however, uses many of the Task Force's recommendations, such as the use of soil blending or tilling as a protective measure for sites with historical pesticide contamination, in guidance to developers in the State's voluntary cleanup program.

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